

به نام خدا



مرکز دانلود رایگان  
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)  
( ) XRD ( )  
( ) nm ( )

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Co – Precipitation, Spray Drying, Freeze- Drying, Combustion Synthesis  
(CS), Sol – Gel

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(Merck) ( ) (Merck)  
(Merck) (Merck)

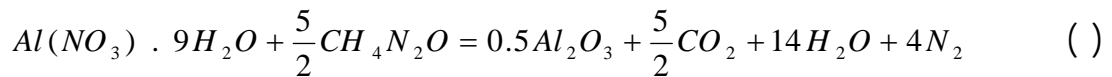
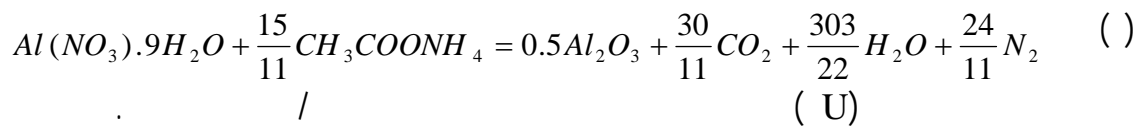
ml

C°  
C°

N<sub>2</sub> H<sub>2</sub>O CO<sub>2</sub>

)  $\frac{O}{F}$   
(  
Al, C, H

(AA)



0.8U+0.2AA , 0.9U+0.1AA , U

0.75U+0.25AA , 0.7U+0.3AA , 0.6U+0.4AA , 0.5U+0.5AA

C°

0.75V+0.25AA

( )

XRD

( )

XRD

C° (0.75V+0.25AA)

C°

XRD

C<sup>o</sup>

( )

XRD

( 0.5U+0.5AA )

XRD

AA  
( 0.6U+0.4AA )

( ) 0.8U+0.2AA

C<sup>o</sup>

( )

XRD

XRD

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XRD

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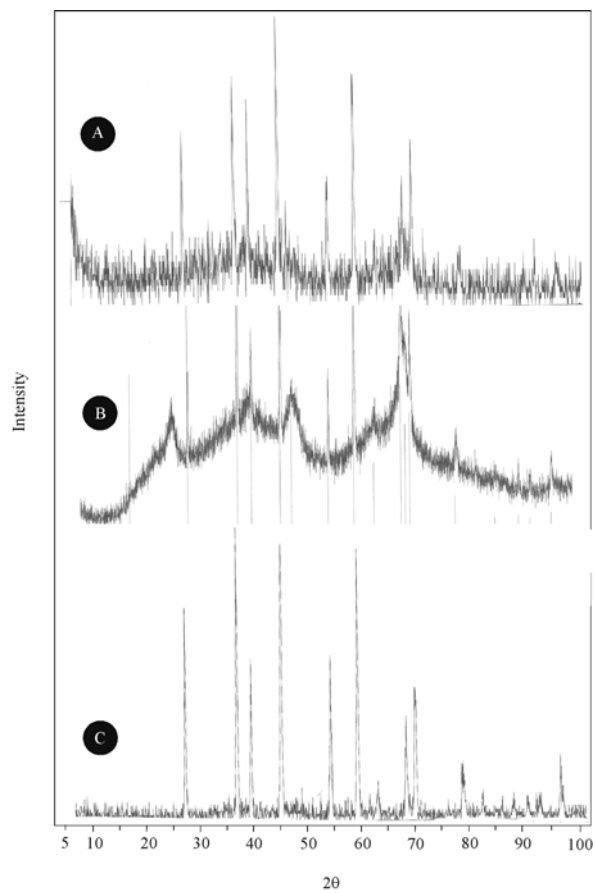
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(XRD

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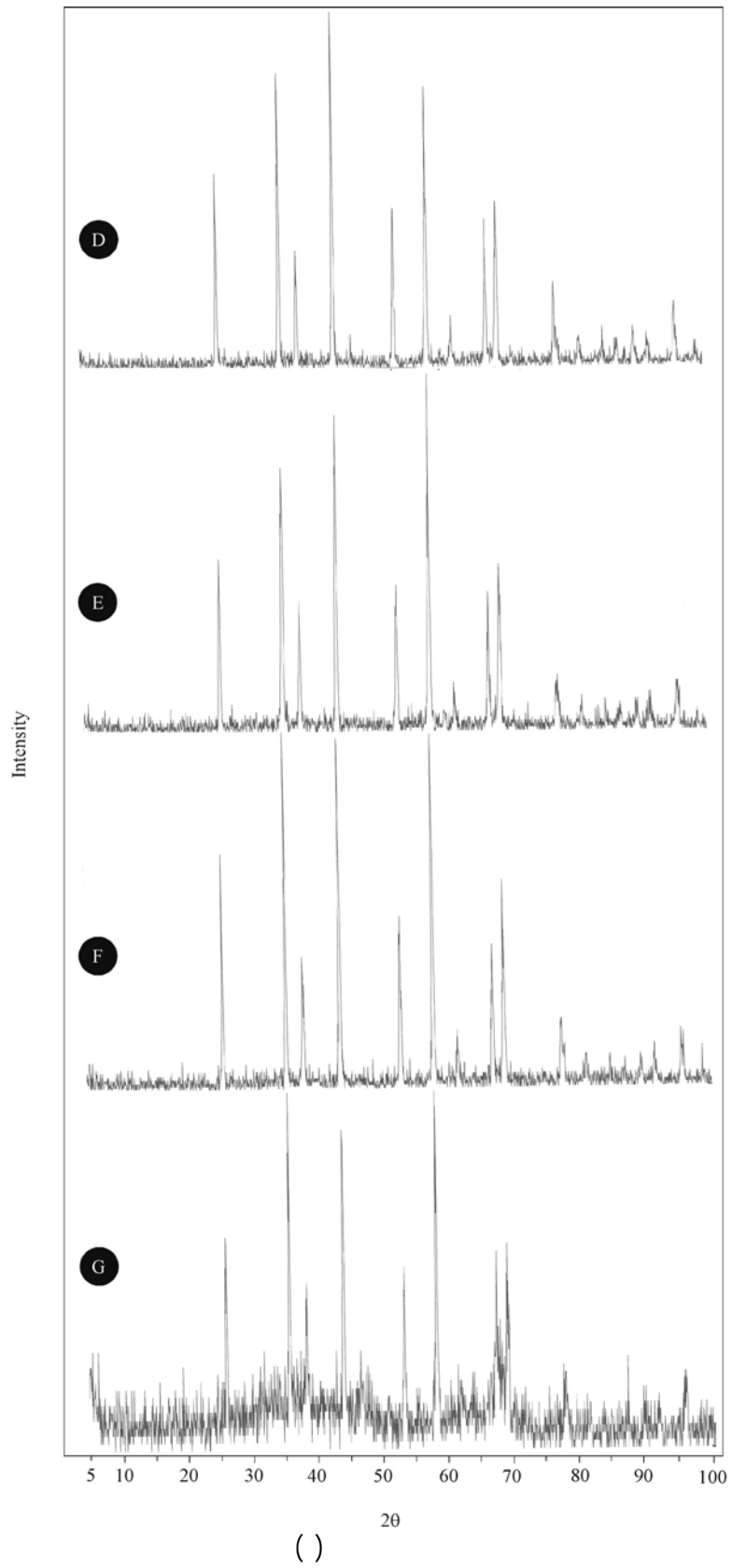
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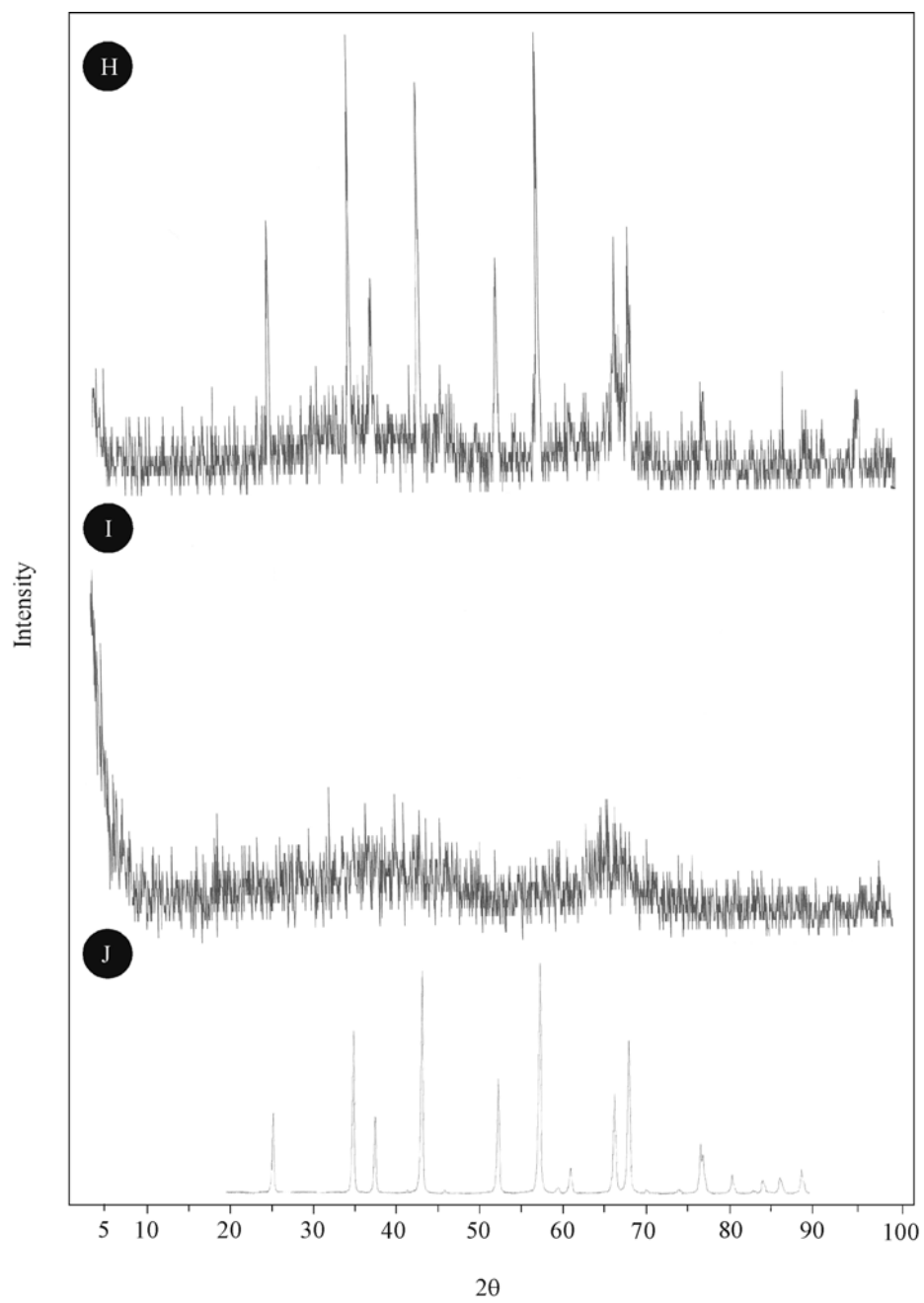
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(H) (G) (F) (E) (D) (C) (B) (A XRD) : ( )  
 ( ) ( ) (J) (I)







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# Synthesis of nanocrystalline alumina powder using solution combustion synthesis method

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## Abstract

Now a days different methods can be used for producing nanocrystalline powders. One of the simplest methods for synthesizing this type of powders is solution combustion synthesis, in which the powder produced through the combustion of a gel. The main aim of the present study was to synthesis nanocrystalline alumina powder containing minimum amount of agglomerates by controlling chemical composition and the combustion reaction temperature. To carry out the investigation, aluminum nitrate was used as the source of aluminum ion and urea and ammonium acetate were used as the fuel mixture.

In this study XRD method was used for determining crystal structure and crystalline size of the phase synthesized through the combustion reaction. The results showed that the optimum temperature of the combustion reaction is 500 °C and optimum chemical composition of the fuel for preparing the gel is 80 % urea and 20 % ammonium acetate. In the optimum conditions, alpha alumina powders with crystalline size lower than 60 nm and having little agglomerates were produced.

Keywords: Combustion Synthesis, Aluminum Nitrate, Urea, Nanocrystalline, Alumina powder

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1- B.Sc. Student  
2- Assistance Prof.